Total	Qty. for	#		
	Assembly	Spares	Description	Comments
1	1	0	Synthetic Quartz Jar from Covalent	Virgin condition from vendor
1	1	0	Expansion chamber with bellows protector and vacuum restraint	Cleaned at Astro Pak
1	1	0	Backing flange, 1.9" thick x 17" O.D. x about 12" ID, about 53 lbs.	use shoulder bolts & 2 people to move
·	1		1" Carten Valve, HF1075	accontante sono a 2 people to move
	2		1/4" Carten Valve, MD-250	
	1		PT83 pressure transmitter	
	1		Tubing spool between PT83, MV-83 and MV-80	
	1		Tubing spool between MV-80 and MV-81	
	1		Filter, Swagelok SS-4FW-VCR-2, for MV-83 outlet	
			VCR gaskets, unplated, 1/4"	
			VCR gasket, unplated, 1"	
			VOIX gasker, unplated, 1	
2	0	2	Gold O-ring, 0.031" dia. Wire x 12.20" ID	Designate size on carrier
2	2	0	Gold O-ring, 0.031" dia. Wire x 12.15" ID	Designate size on carrier
n/a	n/a	n/a	Carrier Sheets for gold o-rings	Designate size on earner
11/4	11/4	11/4	Carrier Criceta for gold of fings	
1	1	0	Teflon cone for stretching and placing gold o-ring, 12.300" dia.	Positioning tool
1	1	0	Teflon stepped ring for placing gold o-ring, 12.300" dia.	Positioning tool
<u>'</u>			Tenori stepped fing for placing gold o fing, 12.300 dia.	1 Ositioning tool
2	2	0	75 Viton O-ring, size 454, in sealed bag	
1	0	1	75 Viton O-ring, size 454, loose	Designate as spare
<u>'</u>	Ů		10 Vitori O Tirig, 3120 404, 10030	Designate as spare
12	12	0	Hex head bolts, 3/4" -16 x 5" long, 18-8 stainless steel	Flange bolting hardware
12	12	0	Nuts, 3/4" -16, 18-8 stainless steel	Flange bolting hardware
12	12	0	Lockwashers, 3/4", 18-8 stainless steel	Flange bolting hardware
24	24	0	Washers, 3/4", 18-8 stainless steel	Flange boiling hardware
24	24	U	Washers, 3/4, 10-0 stainless steel	Flange boiling natuwate
2	2	0	Cajon elbow, 1/8" MNPT x 1/4" VCO	For inter-seal pump out
2	2	0	VCO cap, 1/4"	For inter-seal pump out
2	2	U		• •
			1/8" MNPT, pipe plugs, 18-8 stainless steel	To plug backing flange pump out
8	6	2	Shoulder bolts, 3/8"-16 x 5" long shaft	flange lifting aid
0	0			
			Teflon ears	to center the upper flange on the lower
		TOOLS		
		IUULS	Rotation assembly fixture	To hold flanged assembly
			Jiffy Jack	To lower the quartz jar
			Tape measure	to measure clearance for jar
			Class 10 quality Tech wipes, presaturated with isopropal alcohol & DI water	general cleaning
			Semiconductor grade Isopropyl alcohol	general cleaning
			Teflon push sticks	to push gold o-ring down teflon cone
			Tweezers	to remove fuzz or foreign objects
			Scapel	to remove fuzz or foreign objects
			Magnifying glasses	to inspect cleanliness of surfaces
			High illumination light source	to inspect cleanliness of surfaces
			Large clean plastic bags	to cover parts if a pause in procedure
			Large orean plastic pays	to cover parts if a pause in procedure
			Clean four wheeled dolly	for moving quartz jar.
			Thin teflon sheet, 6" x 37" long	to line the inside of backing flange
			Kapton tape	to attach teflon sheet to bkg flange
			Scissors	to attach terion sheet to bkg hange
			Plastic calipers	to measure thickness of quartz flange
			Non-metallic straight edge at least 13.5" long x 0.001" straight	to measure flatness of quartz flange
			Digital camera	to document the procedure
			Feeler gauges Toften tops	to measure closing gap b/w flanges for 1/8" flange pump out ports
			Teflon tape	
			Socket, 1.125" for torque wrench	To tighten flange bolts
			Ratchet	To tighten flange bolts
			Torque Wrench, 15 ft-lbs, 40 ft-lbs, 60 ft-lbs, 75 ft-lbs.	To tighten flange bolts
			Crescent wrench	To tighten flange bolts